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In the

Supreme Court of the United States

OCTOBER TERM 1971

No. 71-485

ROBERT GOTTSCHALK,
Acting Commissioner of Patents,
Petitioner,

—v.—

GARY R. BENSON and ARTHUR C. TABBOT,
Respondents.

ON WRIT OF CERTIORARI TO THE UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS

BRIEF *AMICUS CURIAE* FOR WHITLOW COMPUTER SYSTEMS, INC.

Question Presented

Whether the operation of a digital computer under the control of a computer program is embraced within 35 U.S.C. 101 as a class of patentable subject matter.

Interest of *Amicus Curiae*

Whitlow Computer Systems, Inc. (hereafter Whitlow) has received consent from both parties to file this Brief as *Amicus Curiae*. The letters of consent have been filed with the Clerk of this Court.

Whitlow, a New Jersey corporation, is engaged exclusively in the development, production and sale of

computer programs used in the operation of general purpose digital computers. Whitlow also supplies various support services to computer users and the data processing industry in general.

Whitlow believes that it needs and is entitled to the full protection of the patent laws, as written, for its inventions and discoveries of new and imaginative ways in which a computer can be operated under the control of computer programs. It can be fairly asserted that the sale and use of computer programs has been effectively controlled by large computer manufacturers[1] and that these manufacturers will continue to dominate this field unless computer programs are protected by patents. It is obviously in the interest of all computer manufacturers that no restrictions be placed on the use of their equipment. But it is Whitlow's firm conviction that just as the computer manufacturers have access to the patent laws for protection of their computer equipment, so should Whitlow and others similarly situated have equal protection under the patent laws for inventions and discoveries in computer programs.

Whitlow, by applying for a patent on a computer program which took seven skilled technical personnel twelve man-years of work to develop and thereafter by concentrating virtually all its efforts on perfecting and marketing this computer program, has placed its faith in the patent system.[2]

Thus, Whitlow's interest is clear. If this Court affirms the decision below, it will ensure review of Whitlow's patent application by the Patent Office. Whitlow is con-

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[1] *See EDP Industry Report*, Vol. 6, No. 15, June 16, 1971.

[2] It has been Whitlow's experience that the financial community views investment in the software industry with justifiable apprehension because it is not certain whether computer programs will be accorded the benefit of the patent system. Whitlow believes that many potential investors refused to invest in Whitlow simply because it could give no assurance that its computer programs will be held to be patentable subject matter.

fident that its invention can be tested under and will satisfy all standards of patentability under 35 U.S.C. §§ 101-103 relating to novelty, utility and unobviousness. If this Court reverses the decision below, the unpatentability of Whitlow's computer program will *a fortiori* be finally decided, as may its continued ability to compete with computer manufacturers in the computer programming industry.

In support of an affirmative answer to the question presented, it is the objective of Amicus Whitlow to convince this Court: *first*, that as a practical matter, it is essential for continued and orderly growth of the computer programming industry as well as in the interest of our national economy that high technology in general and computer programs in particular always find a place in our patent system; *second*, that the operation of a computer under the control of a computer program, by definition, cannot be said to be a series of mental steps; *third*, Congress has already acted in 35 U.S.C. 100(b) to include this subject matter under the Patent Act wherein it has defined a patentable "process" *inter alia* as a "new use of a known . . . machine"; and *fourth*, that the Patent Office not only has the capability of examining inventions in computer programs but also has a statutory duty to do so.

Statement

1. Computer Programs

A computer program is a sequence of instructions for controlling the operation of a digital computer.[4] When a

[4] *American National Standard Vocabulary for Information Processing, Standard No. ANSI X3.12—1970* (Revision of USA Standard X3.12—1966), at 30, approved February 18, 1970 by the American National Standards Institute, Inc. The development of this Standard Vocabulary was sponsored by Amicus Business Equipment Manufacturers Association (BEMA). This Vocabulary was adopted by the U. S. Office of Management and Budget on October 16, 1970.

program is inserted into the computer, it interacts with components of the computer to form a sequence of electrical signals that cause various components of the computer to operate in a particular fashion. For example, certain instructions can be used to cause the computer to add or subtract signals representative of numbers; and, by performing repeated additions or subtractions, the computer can be made to multiply or divide.

If the computer could perform only these arithmetical operations under control of a computer program, it would be little more than an elaborate slide rule, adding machine or desk calculator. However, the computer is also able to perform logical operations such as comparing signals or testing for the presence or absence of specified conditions. These properties, and the computer's ability to store the results of its operations, enable the computer to perform intricate operations repeatedly, to improve its performance automatically, and to modify its sequence of operation so as to produce results that could not have been attained in any practical way by a group of human beings.[4]

Because the operations that a computer performs can be varied simply by modifying the program, computer-program-control of a digital computer makes the digital computer an extremely flexible instrument[5] that renders it susceptible to use in a wide variety of applications.[6] Im-

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[4] "[Computation by human means is] as a practical matter, impossible because of the enormous amount of calculations to be made and the vast amount of time that would be required with any method other than a computer." Brief for International Business Machines Corporation as Amicus Curiae (hereafter cited as the IBM Brief) at 12.

[5] IBM Brief at 12.

[6] A number of such uses are listed by Amicus Business Equipment Manufacturers Association. Brief for Business Equipment Manufacturers Association as Amicus Curiae (hereafter cited as the BEMA Brief) at 17-19.

portantly, the extensive storage capacity and flexibility of the computer permit the use of programming techniques that can operate the components of the computer in significantly different ways to achieve the same result; and programs which use the computer's resources creatively can achieve a given result using considerably less computing time or computer storage capacity.[3] Thus, there is considerable room for improvement in programming techniques over the state of the art.[4] Amicus Whitlow contends that the class of statutory subject matter under

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[3] This Court, by taking judicial notice of the computer's ability to operate in different ways and to improve its performance, must reject the absurd comparison of a computer to a player piano and the equally absurd comparison of a computer program to a player piano roll. BEMA Brief at 8, Petitioner's Brief at 26. The only meaningful similarity between the two is that a computer program, like a piano roll, must take some tangible form so that it can interact with the machine. In contrast to a piano roll, which is simply a substitute for a pianist who would strike the same keys in order to play the same musical composition, a computer program functions without human intervention to control the performance of operations in the computer which are beyond human control. Neither the player piano's mechanism nor the piano roll can change the piano's internal operation so as to produce the same output (i.e. the musical composition) more efficiently or in significantly different ways in any way comparable to a computer program changing the operation and efficiency of a computer.

[4] Present day programming techniques operate modern computers at an average efficiency of only 40% of their computing capacity. It has been estimated that "another 20%-30% increase [above the present 40% efficiency level] in utilization is possible through more efficient computer system utilization." Auerbach Info Inc., Philadelphia, Pa., *Computer Software*, EDP Series No. 7, at 22 (1971).

An example of the efficiencies that can be attained in operating a computer can be found in a patent application filed with the U. S. Patent Office by Amicus Whitlow on an improved method of sorting and ordering data. Other computer programs exist for this purpose. However, the technique claimed by Whitlow accomplishes the same result in approximately half the time required by other programs on the same computer.

35 U.S.C. 101 should embrace both the new applications to which the computer will be applied and the new techniques that a computer programmer devises for the efficient and expeditious operation of a digital computer.

2. The Question Presented

It is important at the very outset to clarify the question presented here on appeal. It is submitted that, taken collectively, the briefs supporting Petitioner tend to confuse and broaden the question presented because they ask that this Court analyze and understand the mathematics underlying conversion from binary coded decimal representations to binary representations and they imply that the decision below should be reversed if this Court finds that such a mathematical conversion is obvious in the mathematical arts. But the question of obviousness is not before this Court. Indeed the Court below went to considerable effort to emphasize that the issue was simply whether the operation of a computer programmed to receive information in binary coded decimal form and convert it into binary form is embraced within 35 U.S.C. 101. Judge Rich stated explicitly:

> "As to these claims, no prior art is cited and no question is raised as to utility, novelty or unobviousness. The asserted advantages and the explicit advantage resulting therefrom in the data-processing art have not been questioned.
>
> . . . .
>
> "... It is our opinion that up until the time of appeal to this court there was only one ground of rejection relied upon and that was noncompliance with section 101.
>
> . . . .
>
> "... We conclude, appellant's apprehension notwithstanding, that the examiner and the board relied

on only one ground, predicated on 35 U.S.C. § 101, that claims 8 and 13 are either directed to or at least embrace non-statutory subject matter. . . .

"We turn then to consideration of what the solicitor's brief admits is the 'principal rejection' predicated on section 101, which we find to be the only rejection.

. . . .

". . . We conclude that the Patent Office has put forth no sound reason why the claims in this case should be held to be non-statutory.'"[9]

Amicus submits, therefore, that the question of patentability based upon the statutory substantive issues of novelty, utility and non-obviousness can only be answered on a case-by-case basis once the question here presented is answered in the affirmative.[10]

Summary of Argument

Technology has historically been one of the principal assets of the economy of the United States. Despite early promises that the independent computer programming industry would grow rapidly in the 1960's and 1970's, it has become relatively stagnant. Very few computer programs developed by this industry have enjoyed wide-

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[9] *Application of Benson & Tabbot*, 441 F.2d 682, 684-688 (C.C.P.A. 1971), *cert. granted*, 405 U.S. 915 (1972).

[10] It should be noted that Respondents' patent application can be subjected to further proceedings in the Patent Office on these questions if remanded to the Patent Office for issuance following decision by this Court. "[I]f the examiner has specific knowledge of the existence of a particular reference which obviously meets the terms of any of the appealed claims as to which the examiner was reversed, he should submit the matter to the group director for authorization to reopen prosecution under rule 198 [Rules of Practice in Patent Cases, 37 C.F.R. 1.198] for the purpose of entering the new rejection." § 1214.04, Patent Office, U. S. Department of Commerce, *Manual of Patent Examining Procedure* (1961). It is possible, therefore, that the examiner will conclude that he must reopen prosecution in view of the references cited on the obviousness allegation by Amici supporting Petitioner.

spread commercial success and those programs that are developed are often held as trade secrets. Until it is guaranteed that the incentives provided by the patent laws apply to computer programs as a class of high technology, there will be continued reluctance to invest time and money in this technology. Absent patent protection, it can be expected that the currently favorable balance of trade in this technology will inevitably deteriorate as the accomplishments of other nations approach or surpass those of the United States.

It is unreasonable to conclude that the operation of a general purpose digital computer under the control of a computer program is a series of mental steps. A computer program is a series of instructions for operating, using, or controlling the machines called general purpose digital computers. Many of the tasks performed by these machines cannot be accomplished by humans and a computer program by definition is intended for use in a computer. Thus, computer technology, as it relates to both hardware and software,[11] is quite distinct from human mental activity.

In the Patent Act of 1952, Congress expressly included new uses of known machines within the definition of patentable processes, thereby codifying a long established rule that new uses of existing machines were a class of patentable subject matter. General purpose digital computers are machines designed and intended specifically for a great variety of uses (many of which are still unrecognized or undiscovered) in diverse areas of technology. Computer programs are the means for operating these machines to achieve these new uses.

Finally, there is no basis in law for this Court to exclude computer programs from a statutory class of patentable subject matter because of the administrative failings of the Patent Office.

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[11] "Hardware" designates the electronic and mechanical components of a computer and "software" refers generally to computer programs.

ARGUMENT

I. Practical Considerations Dictate That Patent Protection Is Needed For Orderly Growth In The Computer Programming Industry And Is Desirable To Maintain The Preeminent Position Of The United States In This Technology.

A. Continued Growth of the Computer Programming Industry Would Be Jeopardized by the Lack of Patent Protection for Its Products.

Commercial installations of stored-program computers egan about 1953.[11] In the 1950's, computer users either sed programs distributed free of charge by computer anufacturers or developed their own programs. Conderable cooperation prevailed at this time among comter users and manufacturers because of the lack of sential programs and the scarcity of skilled programers required to develop them.[12]

When the second generation of computers was developed the early 1960's, it became necessary to convert the comter programs developed for the earlier machines to proams that would operate on the newer machines. Many dependent software enterprises were formed to meet this ed. The same conversion process was required when a ird generation of computers became available in the mid-60's, and again this need was met by independent softare companies. During this period the United States overnment also required extensive programming services r defense and space applications. Much of this work

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[11] 6 *Encyclopedia Britannica* 245A (1972).

[12] For example, the SHARE Organization was formed in 1955 this purpose and it freely distributed to users of IBM equipt such valuable programs as UAFAP, which was developed at ted Aircraft Corp. By the late 1960's the contribution of comter programs to SHARE decreased sharply as more and more grams were regarded as valuable property and were retained as secrets. In 1970 the SHARE Organization was assimilated SHARE Inc., located at 25 Broadway, New York, N. Y.

was performed by the independent programming industry.[14] As a result of these pressures, the independent software industry expanded rapidly through most of the 1960's.[15]

By 1969 the conversion of computer software from second generation equipment to newer equipment was largely completed and there was little expectation that there would be much need for conversion in the future. At that time government requirements for computer programming markedly decreased and funds available for investment in the independent software industry were drastically reduced.[16] Consequently, independent software companies could no longer rely on many of the sources that previously had funded the development of computer programs. Rather, independent software companies now had to rely on other ways of commercially exploiting their programming expertise, chiefly by developing and selling proprietary computer programs to meet the specific needs of industry in general. However, successful commercial exploitation of such programs proved exceedingly difficult. Of approximately 600 programs that are presently being marketed by independent software companies, only eight have gained wide acceptance in the marketplace;[17] and of the independent software businesses that were operating in January 1970, it is likely that only half presently exist as independent entities.[18] Moreover, because of the uncertain state of patent protection for computer programming,

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[14] *Computer Software*, *supra* note 8, at 27-29 and 39-40.

[15] Thus, in 1966, there may have been some justification for Hon. D. F. Turner to observe that there was no need for patent protection to further development of computer programming. Letter from Hon. D. F. Turner, Assistant Attorney General, Antitrust Division, to Hon. E. J. Brenner, Commissioner of Patents, October 21, 1966, quoted in BEMA Brief at 11.

[16] *Computer Software*, *supra* note 8, at 39-40.

[17] Id. at 32.

[18] Id. at 31.

many of the best programs are being held as trade secrets."[19] Indeed, if the decision below is reversed, secrecy for *all* computer programs will be the rule rather than the exception.[20] Amicus Whitlow submits that the erection of secrecy barriers around computer programs would not be in the public interest since it would retard advancement in the programming technology by depriving others of existing knowledge and by necessitating duplication of effort to acquire such knowledge.[20a]

Patent protection has traditionally been an incentive for disclosure and a means for stimulating the investment of risk capital in new discoveries.[21] If patent protection continues to be available for computer software under the same standards that it is available for other inventions, such as those relating to computer hardware, full disclosure of programs would be possible. Admittedly, the right to use certain programs found to be novel, useful, and unobvious could be restricted. However, the right to restrict the use of computer programs is limited to commercial

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[19] Although the U. S. Copyright Office has been receiving registration forms on computer programs and will accept copies of computer programs deposited in compliance with the Copyright Act, there has been no judicial determination that copyright protection extends to computer programs. Assuming *arguendo* that copyright protection embraces computer programs, there is still intense debate over whether copyright protection extends to the operation of the computer in accordance with instructions set forth in a computer program. The prevalent view is to the contrary, namely that such protection extends only to the mere copying of the particular expression used by the programmer to define the operations of the computer. *See Baker* v. *Selden*, 101 U.S. 99, 103 (1880). In the face of this uncertainty, it would indeed be risky to deposit a copy of a computer program in the Copyright Office for all to see rather than to preserve it as a trade secret.

[20] An ABA committee has reached this conclusion: "Depending upon the outcome in [this appeal], it may be that trade secrets will become the standard operating procedure in the software area." Patent, Trademark and Copyright Section, American Bar Association, *Committee Reports*, at 253 (1972).

[20a] The undesirable effects of secrecy in the computer programming industry have been described by an Amicus in Support of Petitioner. See BEMA Brief at 12.

[21] *Graham* v. *John Deere Co.*, 383 U.S. 1, 9 (1966).

applications and does not cover experimental use."[11] Accordingly, further research and development will not be restricted by patenting and can only be aided by the disclosures made possible through patenting. Moreover, the right to obtain patent royalties on the commercial use of a patented computer program will provide incentive for investment in research and development in the programming field."[12]

B. The Economic Position of the United States in the World Economy Would Be Adversely Affected by the Absence of Patent Protection for Sophisticated Technology such as Computer Programs

The importance of sophisticated technology such as computer programming to the United States economy is borne out by the fact that the United States has consistently maintained a favorable balance of payments in such technology notwithstanding the present overall deficit in its

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[11] Experimental use of a patented invention is not infringement. *Chesterfield* v. *United States*, 159 F.Supp. 371 (Ct. Cl. 1958); *Dugan* v. *Lear Avia, Inc.*, 55 F.Supp. 223 (S.D.N.Y. 1944), aff'd 156 F.2d 29 (2d Cir. 1946).

[12] That our patent system has spurred invention and at the same time benefited the public as intended by the framers of the Constitution was aptly stated by the Seventh Circuit Court of Appeals.

> "Under its constitutional right to legislate for the promotion of the useful arts, Congress passed the patent statutes. The public policy thereby declared is this: Inventive minds may fail to produce many useful things that they would produce if stimulated by the promise of a substantial reward; what is produced is the property of the inventor; he and his heirs and assigns may hold it as a secret till the end of time; the public would be largely benefited by obtaining conveyances of these new properties; so the people through their representatives say to the inventor: Deed us your property, possession to be yielded at the end of 17 years, and in the meantime we will protect you absolutely in the right to exclude every one from making, using, or vending the thing patented, with your permission." *Rubber Tire Wheel Co.* v. *Milwaukee Rubber Works Co.*, 154 F. 358, 361 (7th Cir. 1907), citing *Bloomer* v. *McQuewan*, 55 U.S. 577, 586, 587, 14 How. 539, 548 (1852); *United States* v. *American Bell Telephone Co.*, 167 U.S. 224 (1897); and *Bement* v. *National Harrow Co.*, 186 U.S. 70 (1902).

balance of payments. An analysis of technological exchanges between the United States and foreign nations from 1956 to 1965 shows a surplus in favor of the United States rising from $311 million in 1956 to over $1 billion in 1965.[34] By 1969 the surplus of payments accounted for by high technology and its products reached $1.67 billion.[35] A large portion of the overall balance of trade is due to the export of data processing systems that contributed 47.5% of the 1969 surplus.[36]

However, the strong support high technology has given the United States trade position has recently shown signs of weakening. In 1970, for example, data processing equipment accounted for only 37% of the trade surplus.[37] In 1971 the trade surplus in high technology products decreased by $1.3 billion. It is no mere coincidence that in 1971 the United States suffered its first deficit in the overall balance of trade since 1893.[38]

An important reason for the weakening of the United States trade position with respect to foreign nations has

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[34] Organisation for Economic Cooperation and Development, *Reviews of National Science Policy—United States*, at 325-328, (1968).

[35] Staff Study, Office of International Investment, Bureau of International Commerce, U. S. Department of Commerce, "Policy Aspects of Foreign Investment by U. S. Multinational Corporations", at 30-40, in Bureau of International Commerce, U. S. Department of Commerce, *The Multinational Corporation*, 1 *Studies on U. S. Foreign Investment* (1972).

[36] BEMA, *Foreign Trade Issues Affecting the Data Processing Equipment Manufacturing Industry* (1972). *See* Hon. M. H. Stans, Secretary of Commerce, "On Science, Technology and the Economy," Statement before the Subcommittee on Science, Research and Development of the House Committee on Science and Astronautics, July 27, 1971.

[37] BEMA, *Foreign Trade Issues Affecting the Data Processing Equipment Manufacturing Industry*, *supra* note 26, at 2.

[38] Hon. P. G. Peterson, Secretary of Commerce, Statement before the Subcommittee on Science, Research and Development of the House Committee on Science and Astronautics, April 11, 1972.

been the increasing deficit in the trade of low technology products and raw materials while the surplus in trade of high technology products has stagnated.[29] In recent years the rate of technological development in the United States has lagged behind that of other countries which presently are rapidly acquiring and implementing knowledge and know-how originally developed in the United States.[30] As a result, with less expensive labor markets and government protected industries, foreign countries are supplanting United States industries involved in sophisticated technological products and processes such as the semiconductor technology.[31] Because of the continuous acquisition of United States technology by foreign countries, new areas of technology must be continuously and aggressively developed so that the United States world trade position is not adversely affected.

Because of the need to restore the United States economy to a favorable competitive position with respect to foreign industry, crucial incentives for making our industry more efficient should not at this time be selectively abrogated. In the fledgling independent software industry resides the potential to streamline and revitalize domestic industry. This potential can only be realized if adequate incentives are given to inventors, particularly individual inventors

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[29] Id. *See also* U. S. Department of Commerce, *Technological Innovation: Its Environment and Management* (1967); E. Denison, *The Sources of Economic Growth in the United States*, Committee for Economic Development (1962).

[30] Statement of Hon. P. G. Peterson, *supra* note 28.

For a discussion of how United States technology is acquired by other countries, see J. E. Tilton, *The International Diffusion of Technology: The Semiconductor Case* (1971).

[31] *The International Diffusion of Technology: The Semiconductor Case*, *supra* note 30.

and small organizations" who cannot and will not spend the time, effort and money necessary to achieve necessary technological breakthroughs without the assurance that patent protection can be obtained for their inventions. Accordingly, regardless of the position assumed by foreign countries concerning the patentability of computer programs, the United States should welcome all patent applications for computer programs and, after suitable review by the Patent Office, should protect novel, useful, and unobvious computer programs thus insuring the development of the domestic independent software industry."

"Notwithstanding the high concentration of researchers in corporate laboratories, more than half of the important twentieth century inventions investigated by Professor John Jewkes were found to have been produced by independent inventors. The subject matter of these inventions includes, *inter alia*, air conditioning, automatic transmissions, Cinerama, the cyclotron, electric precipitation, the helicopter, the jet engine, Kodachrome, magnetic recording, penicillin, Polaroid camera, power steering, radio, streptomycin, Xerography, catalytic cracking of petroleum, airplane, cotton picker, gas refrigerators, insulin. *See* Jewkes, Sawers & Stillerman, *The Sources of Invention*, at 82-85 (1958).

"Certain Amici point out that several foreign countries do not at present allow patents for computer programs. BEMA Brief at 26-29 and IBM Brief at 26-29. However, it should be noted that these decisions not to grant patents have generally been made by Patent Office tribunals and cannot be said to be settled. In fact, the Canadian Patent Office has recently reversed its position on the patentability of computer programs and now generally agrees with the United States Court of Customs and Patent Appeals. See *In Re Waldbaum*, (Canadian) Patent Office Record, Vol. 100, No. 3, January 18, 1972, at vii. Inasmuch as many foreign countries follow U. S. patent practice, it is likely that they may ultimately follow the decision of this Court with respect to the patentability of computer programs.

Even if patent protection were not available in a foreign country, it is unlikely that data would be exported to foreign countries for computer processing as certain Amici contend. *See* BEMA Brief at 27 and Burroughs Brief at 19. The possibility that the computer processing could be done by computers based in foreign countries where no patent protection is available would insure that any computer program patented in the U. S. would be available for license in the U. S. at a reasonable and competitive royalty.

II. The Operation Of A Digital Computer Under The Control Of A Computer Program Is Not A Series Of Mental Steps.

Article I, Section 8, Clause 8 of the Constitution of the United States provides:

> "[Congress shall have power] . . . To promote the Progress of Science and useful Arts, by securing for limited Times to . . . Inventors the exclusive Right to their . . . Discoveries;"

The constitutional standard was aptly explained in *Graham* v. *John Deere Co.*, *supra*, where this Court stated:

> "Innovation, advancement, and things which add to the sum of useful knowledge are inherent requisites in a patent system which by constitutional command must 'promote the Progress of . . . useful Arts.' This is the standard expressed in the Constitution and it may not be ignored." 383 U.S. 1, 6.

In discharging its responsibility as final interpreter of the Constitution, this Court has consistently been mindful of the constitutional standard and has repeatedly limited the grant of patent monopolies to discoveries which are consistent with this standard and the Acts of Congress. Thus, it has long excluded as unpatentable intangible knowledge such as scientific principles, methods of doing business, laws of nature, ideas and other abstractions. *Le Roy* v. *Tatham*, 55 U.S. 167, 14 How. 156 (1852); *O'Reilly* v. *Morse*, 56 U.S. 65, 15 How. 62 (1853); *Burr* v. *Duryee*, 68 U.S. (1 Wall.) 531 (1863); *Fuller* v. *Yentzer*, 94 U.S. 288 (1877); *Tilghman* v. *Proctor*, 102 U.S. 707 (1880); *DeForest Radio Co.* v. *General Electric Co.*, 283 U.S. 664 (1931); *Mackay Radio & Telegraph Co.* v. *Radio Corp. of America*, 306 U.S. 86 (1938).[*]

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[*] *See also Manhattan General Construction Co.* v. *Helios-Upton Co.*, 135 F. 785 (C.C.E.D. Pa. 1905); *Hotel Security Checking Co.* v. *Lorraine Co.*, 160 F. 467 (2d Cir. 1908).

The underlying rationale of these cases is that the utilization of such knowledge is essentially mental in character and that the patenting of such knowledge would result in the withdrawal of large segments of knowledge from public use and their subjection to intellectual monopolies in direct contravention of the constitutional purpose of promoting advances in the useful arts. As stated by Petitioner such intangibles are "the basic currency . . . of scientific development whose free exchange must not be hindered by the granting of monopolies."[15] With this, Amicus Whitlow is in full agreement.

For the very reason that such intangibles are the currency of scientific development, they are also in many cases the cornerstone of invention. This Court, by reviewing patents based upon the *application* of such intangibles for novelty, utility and obviousness, has necessarily concluded that such *applications* were patentable subject matter under the predecessor of 35 U.S.C. 101. *See The Telephone Cases*, 126 U.S. 1 (1888): *DeForest Radio Co.* v. *General Electric Co., supra; Mackay Radio & Telegraph Co.* v. *Radio Corp. of America, supra; Funk Brothers Seed Co.* v. *Kalo Inoculant Co.*, 333 U.S. 127 (1948).[16] See also *Dow Chemical Co.* v. *Halliburton Oil Well Cementing Co.*, 324 U.S. 320 (1945).

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[15] *See* Petitioner's Brief at 15.

[16] Some Amici, citing *Funk Bros.*, have argued that the Respondents' claimed invention is obvious over the mathematical relationship involved. Honeywell Brief at 13-17 and IBM Brief at 22-23. It should be recognized that in *Funk Bros.* this Court found that the invention constituted patentable subject matter as an application of a law of nature but deemed the invention to be unpatentable because it was obvious under the test set forth by this Court in *Cuno Engineering Corp.* v. *Automatic Devices Corp.*, 314 U.S. 84, 90 (1941): ". . . if an improvement is to obtain the privileged position of a patent more ingenuity must be involved than the work of a mechanic skilled in the art." As indicated at pages 6 and 7 above, the question of obviousness is not before this Court.

Thus the fact that it is a scientific principle or mathematical relationship[37] upon which a development is built does not, of itself, deprive that development of rising to the dignity of invention provided the requisite tests for patentability are satisfied.

In applying the constitutional standard to method claims, the Patent Office and lower courts, particularly the court below, have evolved a seemingly easy to apply test commonly known as the "mental steps" doctrine. Simply stated, under this doctrine a method is not patentable if its essential aspects reside in mental or intellectual activity. See *Halliburton Oil Well Cementing Co.* v. *Walker*, 146 F.2d 817 (9th Cir 1944); *Application of Heritage*, 150 F.2d 554 (C.C.P.A. 1945); *In re Abrams*, 188 F.2d 165 (C.C.P.A. 1951); *Application of Lundberg*, 197 F.2d 336 (C.C.P.A. 1952); *Application of Venner*, 262 F.2d 91 (C.C.P.A. 1958); *Application of Jones*, 373 F.2d 1007 (C.C.P.A. 1967); *Application of Prater*, 415 F.2d 1378 (C.C.P.A. 1968), *mod. on reh.* 415 F.2d 1393 (C.C.P.A. 1969).[38]

In determining whether the operation of a digital computer under computer program control constitutes a series of mental steps, it is crucial to distinguish between mental activity which is a human activity, and something which is an aid to mental activity but is not a mental activity. The computer can be used as an aid to mental activity,

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[37] Petitioner and Amici in support of Petitioner argue that Respondents' claimed invention is nothing more than a mathematical relationship. *See* Petitioner's Brief at 17-30, BEMA Brief at 24-26, Burroughs Brief at 13-22, Honeywell Brief at 7, and IBM Brief at 7-13. It is essential to recognize that the claimed invention is not merely a mathematical relationship but rather is a method for efficiently operating a digital computer to convert a binary coded decimal number to a binary number using mathematical relationships that exist among the digit positions of these numbers.

[38] An excellent review and history of the development of the mental steps doctrine appears in the Appendix to Appellants' Brief, *Application of Benson & Tabbot*, *supra* note 9.

but the operation of the computer, as specified by the program, is a mechanistic process. It is not a human activity and it is not a sequence of mental steps.

A computer program, as we have substantiated above, is simply a sequence of instructions for controlling the operation of a digital computer to achieve a given result. The tasks to which it is directed are typically incapable of solution by human beings. The computer program itself, because of its very nature and reason for existence, has no utility in an environment devoid of the general purpose digital computer. It is the sole instrumentality for imparting utility to a general purpose digital computer. Therefore, the sequence of instructions (the steps) in the program has no reference to mental activity; its only reference is to the operation of a machine. In short, a computer program by definition is not a sequence of mental steps, since it is operable only on a computer."

" The question whether Respondents' claims are drafted with apparatus limitations sufficient to restrict application to machine implementation and exclude mental implementation should not be confused with the question of what constitutes patentable subject matter. An inquiry into the language of the claims is properly directed only to the statutory requirement that the claims set forth distinctly and with particularity the subject matter which applicant regards as his invention. 35 U.S.C. 112.

In the instant case it would appear that Respondents' claims 8 and 13 are not objectionable under 35 U.S.C. 112 as encompassing mental activity because these claims must be interpreted by reference to the specification and the specification discloses only machines (digital computers) for implementing the steps of the claims. *United States* v. *Adams*, 383 U.S. 39, 49 (1966); *Reed* v. *Parrack*, 276 F.2d 784 (5th Cir. 1960); *Bergman* v. *Aluminum Lock Shingle Corp. of America*, 251 F.2d 801 (9th Cir. 1957). Furthermore, in their reply brief in the court below, Respondents expressly stated that they "have always and consistently held that the appealed claims do not read on 'mental steps'". Appellants' Reply Brief, at 3, *Application of Benson & Tabbot*, *supra* note 9. It is submitted that such statement would provide a clear basis for a legal estoppel to a later inconsistent assertion. *See Moon* v. *Cabot Shops, Inc.*, 270 F.2d 539 (9th Cir. 1959), *cert. denied*, 361 U.S. 965 (1960). Moreover, claim 8 sets forth specific apparatus (a reentrant shift register) for performing the method; and the Court below, after careful analysis, concluded that "[c]laim 8 . . . covers only a machine-implemented process and the apparatus for carrying it out has been disclosed." *Application of Benson & Tabbot*, *supra* note 9, at 687.

III. The Operation Of A Digital Computer Under The Control Of A Computer Program Is Encompassed By The Subject Matter Selected By Congress To Effectuate The Constitutional Purpose Because It Constitutes A New Use Of A Known Machine As Explicitly Defined In 35 U.S.C. 100(b).

It is neither appropriate nor necessary that this Court direct Congress to legislate a new form of protection for computer programs as has been suggested by Petitioner[40] and Amici[41] in support of Petitioner, because Congress has already acted with sufficient clarity.

35 U.S.C. 101, entitled "Inventions Patentable", provides:

> "Whoever invents or discovers any new and useful process, machines, manufacture, or composition of matter, or any new and useful improvement hereof may obtain a patent therefor, subject to the conditions and requirements of this title."

In enacting the Patent Act of 1952, Congress clarified the statutory definition of a "process" as used in 35 U.S.C. 101 by codifying in 35 U.S.C. 100(b) process definitions enunciated in adjudicated cases.

The meaning of the term "process" is explicitly delineated in Section 100 entitled "Definitions", which provides:

> "When used in this title, unless the context otherwise indicates . . .
>
> "(b) The term 'process' means process art or method and includes *a new use of a known* process, *machine*, manufacture, composition of matter or material." (Emphasis added.)

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[40] *See* Petitioner's Brief at 32.

[41] IBM Brief at 33; Burroughs Brief at 24; BEMA Brief at 29.

Although the words emphasized were added to the Patent Act of 1952, it was not intended to create a new class of statutory subject matter nor was it intended to make all new uses patentable. The intention was to make those new uses which meet the requisite standards of novelty, utility and unobviousness patentable."[42]

The issue before this Court is simply whether subjecting a computer to a new use by means of a computer program is a "process" within the meaning of Section 100(b).[43] To decide this question, this Court need only find two facts, both of which are undisputed here. *First, the computer is a machine that is designed specifically to be subjected to an infinite variety of new uses.* There is no meaningful dispute on this fact. One Amicus aptly calls the computer "an almost completely flexible tool";[44] another Amicus states that the computer is capable of use

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[42] *See Grinell Corp.* v. *Virginia Electric & Power Co.*, 401 F.2d 451 (4th Cir. 1968); *Armour Pharmaceutical Co.* v. *Richardson-Merrell, Inc.*, 264 F.Supp. 1013 (D. Del. 1967), *aff'd* 396 F.2d 70 (3d Cir. 1968); *Cresap* v. *Chemplast, Inc.*, 216 F.Supp. 870 (D.N.J. 1962), *aff'd* 316 F.2d 920 (3d Cir. 1963); *Sun Chemical Corp.* v. *Brenner*, 267 F.Supp. 617 (D.D.C. 1967). *See also* Federico, *Commentary on the Patent Act of 1952*, 35 U.S.C.A. 1, at 16.

[43] In response to the argument advanced by one Amicus that the mere function of a machine is not patentable (IBM Brief at 23), it is observed that this rule does not apply in the case of a process patent involving a new use of a known machine. *Elrick Rim Co.* v. *Reading Tire Machinery Co.*, 264 F.2d 481, 487 (9th Cir. 1959), *cert. denied*, 360 U.S. 920 (1959).

[44] "The computer is an incomparable tool of exploration. So many possibilities and combinations may be explored in such a short time that the truly creative person can exercise his mind more freely than ever before and the less gifted person can, by trial and error, be more innovative than ever before. It is an almost completely flexible tool. The solution to any problem that requires sifting and sorting of information or making of computations and calculations can be described in a computer program. Mathematical and scientific problems are particularly susceptible to solution by use of a computer directed by the necessary computer program." IBM Brief at 11, 12.

in broad spectrum of applications ranging from cancer research to relieving crowded court dockets."[42] And Petitioner observes that general purpose computers are used because they "can perform operations under many different programs."[43] *Second, the computer program is the means by which the computer is subjected to its new uses.* Again there is no meaningful dispute on this fact. Petitioner states that "[t]he programs are the variable operating factors which give the computer's hardware circuitry its general utility."[44] One Amicus supporting Petitioner accepts the *American National Standard Vocabulary* definition of a computer program as "a series of instructions or statements, in a form acceptable to a computer, prepared in order to achieve a certain result."[45] Another Amicus supporting Petitioner divides the class of computer programs into systems programs that are "an integral part of the computer system functioning in a housekeeping or control capacity" and applications programs that "in effect, make a general purpose computer system function as a special purpose system for a limited time and purpose."[46]

By finding these two simple facts, this Court must necessarily conclude that program-control of a computer is statutory subject matter as a process under 35 U.S.C. 100(b) and may be patented provided the Patent Office, after examination, finds it meets the statutory standards of novelty, utility and unobviousness.

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[42] BEMA Brief at 16-19.

[43] Petitioner's Brief at 7.

[44] Id.

[45] IBM Brief at 6.

[46] BEMA Brief at 6.

IV. The Statutory Criteria Promulgated By Congress Can Be Applied To Computer Programming Technology As Effectively As To Any Other New And Sophisticated Technology.

Petitioner argues that there is presently no adequate system of classification, searching technique or research files to enable the Patent Office to apply the statutory criteria to computer program applications.[44]

In fact, the Patent Office for a number of years has examined applications and issued patents relating to methods of operating digital computers.[45] There has been no problem examining these applications either from the standpoint of the availability of Examiners technically qualified to understand the software technology or from the standpoint of their ability to search and collect related prior art. There has not, however, been a unified effort to collate and classify prior art relating to computer software until recently. In expectation of an increase in the filing of patent applications relating to computer software due to the growing importance of this technology, the Patent Office initiated a pilot program in cooperation with the Bureau of Standards to collate and classify prior art. Approximately 00 subject matter areas were established and defined[46] for

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[44] *See* Petitioner's Brief at 30-32.

[45] Such patents, dating back to September 1956, are either classified in or cross-referenced in Class 444, Programmed Data Processors, Data Processing Methods and Procedures. In addition, numerous software patents may be found in other Classes. For example, Class 340, Subclass 155 includes patents relating to seismic apparatus combined with or including a programmed data processor.

[46] G. Knight, Jr., *Hierarchical Descriptor Classification System for Documents Related to Computer Software—With Scope Notes* (970). This document was specifically prepared for the Administrator, Office of Systems Search and Documentation, U.S. Patent Office.

classifying an estimated 20,000 prior art publications relating to software. A coordinate index search system was developed by which both patents and publications are indexed according to one or more appropriate descriptor codes. The system was designed so that eventually searches can be conducted by computer rather than by the conventional manual method thereby increasing the efficiency and possibly the thoroughness of the examination process.

Notwithstanding the existence of a classification system, the Patent Office apparently has not considered the classification program to be of very high priority and consequently only about 10% of the prior art documents have been classified. Moreover no effort has been made to collect all patents disclosing or claiming data processing methods. Nevertheless, various Examiners have gathered together approximately 100 patents which have now been either directly classified or cross-referenced in the newly established software class. Thus, with minimal effort by the Patent Office, approximately 2,500 prior art documents have been classified and can now be searched as quickly and as easily as other areas of complex technology such as computer hardware."

Clearly then, the Patent Office appears to have the ability to examine patent applications in computer programming; and if there are any administrative difficulties as alleged, they must be solved by administrative means. The Patent Office has a statutory obligation to make the patent system function as intended by Congress and the

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"Computer software is generally acknowledged to have an equivalent form in computer hardware. In order to circumvent the Patent Office's objections to patenting computer software, software has been disclosed in its hardware equivalent form with the result that both apparatus and method, i.e., software, claims have been obtained. An example is Ferguson, U. S. Patent 3,422,404, *Apparatus and Method for Decoding Operation Codes in Digital Computers*, which discloses computer hardware. However, the inventor stated "It is a software patent." *Computerworld*, February 19, 1969

Constitution and this requires that it be administratively capable of examining patent applications relating to the frontiers of scientific achievement and facilitating disclosure of these new achievements to the public. Such functions are the very work product of the Patent Office.

This Court only six years ago admonished the Patent Office for using its administrative difficulties as an excuse for failing to adhere strictly to the statutory scheme of Congress.[44] In that case, the problem was the failure to examine applications for unobviousness under the requirements of 35 U.S.C. 103. Now the Patent Office, again because of alleged administrative difficulty, asks this Court to eliminate an entire technology from the classes of statutory subject matter. Amicus Whitlow believes that such action would deprive it and others similarly situated of equal protection under the patent laws on the shallowest of reason. Furthermore, if the Petitioner's rationale is followed, precedent will be set for excluding every new technology from the patent laws on a determination by the Patent Office that the technology is administratively too difficult to examine.[45] Clearly, this is in direct contravention of the constitutional intent as

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[44] ". . . We have observed a notorious difference between the standards applied by the Patent Office and by the courts. While many reasons can be adduced to explain the discrepancy, one may well be the free rein often exercised by Examiners in their use of the concept of 'invention.' In this connection we note that the Patent Office is confronted with a most difficult task. Almost 100,000 applications for patents are filed each year. Of these, about 50,000 are granted and the backlog now runs well over 200,000. This is itself a compelling reason for the Commissioner to strictly adhere to the 1952 Act as interpreted here. This would, we believe, not only expedite disposition but bring about a closer concurrence between administrative and judicial precedent." *Graham* v. *John Deere Co.*, *supra* note 21, at 18, 19 (footnote omitted).

[45] For other arguments against the Patent Office's reluctance to classify and search computer programs on grounds of administrative difficulty, see Bender, *Computer Programs: Should They Be Patentable?*, Colum. L.Rev. 241, 250-252 (1968).

implemented by Congress for advancing science in the United States by providing the incentive of eventual reward for venturing into relatively risky technological areas."

CONCLUSION

For the above reasons, Amicus urges this Court to find that the operation of a digital computer under program control is patentable subject matter under 35 U.S.C. 101 and to affirm the decision of the court below.

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[16] In a well-known letter to Oliver Evans, Thomas Jefferson wrote "Certainly an inventor ought to be allowed a right to the benefit of his invention for some certain time. . . . Nobody wishes more than I do that ingenuity should receive a liberal encouragement." Letter from Thomas Jefferson to Oliver Evans (1807), V *Writings of Thomas Jefferson*, at 75-76 (Washington ed.) quoted in *Graham* v. *John Deere Co., supra* note 21, at 8. *See also Grant* v. *Raymond*, 31 U.S. 141, 156 (1832). Chester Carlson, the inventor of Xerography, stated "It takes patience to stay with an idea through . . . a long period. In my case I am sure I would not have done so if it were not for the hope for eventual reward through the incentives offered by the patent system." U. S. Department of Commerce, *Patents: Spur to American Progress*, at 7 (1965).